insulating film; removing the gate insulating film except under the gate electrodes to expose the main surface of the semiconductor substrate; forming an insulating film on the exposed main surface of the semiconductor substrate by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; and forming impurity diffused layers on both sides of the respective gate electrodes in the semiconductor substrate.

According to another aspect of the present invention, there is provided a semiconductor device manufacturing method comprising forming a gate insulating film in an oxynitride form on a main surface of a semiconductor substrate; forming gate electrodes on the gate insulating film; making a nitrogen concentration of the gate insulating film except under the gate electrodes lower than a nitrogen concentration of the gate insulating film which lies under the gate electrodes by oxidizing the gate electrodes and the gate insulating film by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; and forming impurity diffused layers on both sides of the respective gate electrodes in the semiconductor substrate.

A1 cont

According to still another aspect of the present invention, there is provided a semiconductor device manufacturing method comprising forming a gate insulating film in an oxynitride form on a main surface of a semiconductor substrate; forming gate electrodes on the gate insulating film; forming a post oxidation film on the main surface of the semiconductor substrate except under the gate electrodes by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; oxynitrifying the post oxidation film, and forming impurity diffused layers on both sides of the respective gate electrodes in the semiconductor substrate.

According to still another aspect of the present invention, there is provided a semiconductor device manufacturing method comprising forming a first insulating film in an oxynitride form on a main surface of a semiconductor substrate; forming a first conductive layer on the first insulating film; forming a second insulating film on the first conductive layer; forming a second conductive layer on the second insulating film; forming a third insulating film on the second conductive layer; patterning the third insulating film to form a mask; etching the second conductive layer, second insulating film and first conductive layer with the third insulating film used as a mask to form stacked gate structures each having a control gate, second gate insulating film and floating gate; removing part of the first insulating film which lies on the main surface of the semiconductor substrate and is disposed between the stacked gate structures to expose the main surface of the semiconductor substrate and leave another part of the first insulating film which lies under the stacked gate structures, each part of the first insulating film which is left behind under the stacked gate structures acting as a first gate insulating film; forming a fourth insulating film on side walls and upper surfaces of the stacked gate structures and the exposed main surface of the semiconductor substrate by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; and doping impurity into the main surface of the semiconductor substrate with the stacked gate structures used as a mask to form source and drain regions.

A1 cont'd

According to still another aspect of the present invention, there is provided a semiconductor device manufacturing method comprising forming a first insulating film in an oxynitride form on a main surface of a semiconductor substrate; forming a first conductive layer on the first insulating film; forming a second insulating film on the first conductive layer; forming a second conductive layer on the second insulating film; forming a third

insulating film on the second conductive layer; patterning the third insulating film to form a mask; etching the second conductive layer, second insulating film and first conductive layer with the third insulating film used as a mask to form stacked gate structures each having a control gate, second gate insulating film and floating gate, each part of the first insulating film which lies under the stacked gate structures acting as a first gate insulating film; making a nitrogen concentration of the first insulating film which is disposed between the respective stacked gate structures lower than a nitrogen concentration of the first insulating film which lies under the stacked gate structures by oxidizing the stacked gate structures and the first gate insulating film disposed between the respective stacked gate structures by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; and doping impurity into the main surface of the semiconductor substrate with the stacked gate structures used as a mask to form source and drain regions.

A1 cont

According to still another aspect of the present invention, there is provided a semiconductor device manufacturing method comprising forming a first insulating film in an oxynitride form on a main surface of a semiconductor substrate; forming a first conductive layer on the first insulating film; forming a second insulating film on the first conductive layer; forming a second conductive layer on the second insulating film; forming a third insulating film on the second conductive layer; patterning the third insulating film to form a mask; etching the second conductive layer, second insulating film and first conductive layer with the third insulating film used as a mask to form stacked gate structures each having a control gate, second gate insulating film and floating gate; removing part of the first insulating film which lies on the main surface of the semiconductor substrate and is disposed between the stacked gate structures to expose the main surface of the semiconductor substrate

and leave another part of the first insulating film under the stacked gate structures, each part of the first insulating film which is left behind under the stacked gate structures acting as a first gate insulating film; forming a post oxidation film on side walls and upper surfaces of the stacked gate structures and the exposed main surface of the semiconductor substrate by at least one of a vaporizer method, an oxyhydrogen combustion method, and a wet oxidation method performed at temperatures not lower than 950°C; oxynitrifying the post oxidation film; and doping impurity into the main surface of the semiconductor substrate with the stacked gate structures used as a mask to form source and drain regions.--

Please delete the paragraph at page 14, line 21 to page 15, line 1 in its entirety.

Please replace the paragraph at page 32, lines 3-13, as follows:

As described above, according to the embodiments of this invention, it is possible to provide a semiconductor device manufacturing method capable of preventing that electrons are trapped in the gate insulating film to reduce a current amount or the electric field is concentrated on part of the gate insulating film to accelerate deterioration thereof by the presence of damage of the gate insulating film caused at the time of processing of the gate electrodes in a case where a thermal nitride film is used as the gate insulating film.

IN THE CLAIMS

Please cancel Claims 5, 6, 8, 9, 11, 19 and 21 without prejudice.

Please amend Claims 1-4, 7, 10, 12-18, 20 and 22 to read as follows:[2]

1. (Amended) A semiconductor device manufacturing method comprising:

forming a gate insulating film in an oxynitride form on a main surface of a semiconductor substrate;

[2]A marked-up copy of the changes made to the claims is attached.